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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

STAFFORD, PATRICK

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,895	Applicant(s) CATTELLAN ET AL.	
	Examiner PATRICK STAFFORD	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 23 September 2008 have been fully considered but they are not persuasive.

In response to applicant's argument that Pontis '526 does not teach analysing the modulated component of the light beam reflected or transmitted by the tunable mirror, Pontis '526 teaches a method for selecting the emission wavelength of a tunable laser having an external-cavity defining a plurality of cavity modes (paragraph 20, lines 1-2 and Fig. 1, part 10) with a light beam being emitted by a gain medium (paragraph 20, lines 2-3 and Fig. 1, part 12) and the alignment of the resonance wavelength is accomplished by analyzing the modulated component of the light beam reflected or transmitted (paragraph 61, lines 1-6). Friesem '928 was relied upon to teach applying an alternating voltage of an amplitude to the light transmissive material of the tunable mirror at a frequency f_A (col. 3, lines 26-28), thereby selecting a resonance wavelength of the resonance structure and thereby modulating in amplitude the light beam reflected or transmitted by the tunable mirror (col. 5, lines 51-53); and aligning the resonance wavelength of the tunable mirror to at least one of the cavity modes (col. 8, lines 59-61). Friesem '928 was silent on how the alignment was accomplished. For this limitation, Pontis '526 was introduced to teach analyzing the light (paragraph 21, lines 13-20) and aligning the resonance wavelength through the analyzing of the light beam (paragraph 23, lines 1-6). Applicant's claim limitation requiring analyzing a modulated component does not require a specific unique method to accomplish this analyzing but instead only requires the analysis of the

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modulated component. Pontis '526 was relied upon to teach this limitation of analysing the modulated component.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friesem et al (U.S. Patent 6,215,928, hereafter '928) in view of Pontis et al (U.S. Patent Application Publication 2003/0007526, hereafter '526).

Claims 14 and 24: '928 teaches a method for selecting the emission wavelength of a tunable laser (col. 3, lines 26-28), wherein selecting occurs by means of a tunable mirror (col. 3, lines 19-21 and Fig. 1, part 12) that comprises a diffraction grating (col. 3, lines 63-66 and Fig. 2, part 24) and a planar waveguide optically interacting with said diffraction grating (col. 3, lines 63-66 and Fig. 2, part 22), the diffraction grating and the planar waveguide forming a resonant structure (col. 3, lines 33-36), the tunable mirror further comprising a light transmissive material having an index of refraction that varies in response to an electric field applied to the light transmissive material (col. 3, lines 47-51), making the tunable mirror electrically tunable (col. 3, lines 58-62), comprising the steps of:

emitting a light beam to the external cavity (col. 4, lines 40-42 and Fig. 2, part 40);

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applying an alternating voltage of an amplitude to the light transmissive material of the tunable mirror at a frequency f_A (col. 3, lines 26-28), thereby selecting a resonance wavelength of the resonance structure and thereby modulating in amplitude the light beam reflected or transmitted by the tunable mirror (col. 5, lines 51-53); and

aligning the resonance wavelength of the tunable mirror to at least one of the cavity modes (col. 8, lines 59-61).

'928 does not explicitly teach the light beam being emitted by a gain medium and the alignment of the resonance wavelength is accomplished by analyzing the modulated component of the light beam reflected or transmitted by the tunable mirror. However, '526 teaches a method for selecting the emission wavelength of a tunable laser having an external-cavity defining a plurality of cavity modes (paragraph 20, lines 1-2 and Fig. 1, part 10) with a light beam being emitted by a gain medium (paragraph 20, lines 2-3 and Fig. 1, part 12) and the alignment of the resonance wavelength (paragraph 21, lines 13-20) is accomplished by analyzing (paragraph 21, lines 13-20) the modulated component of the light beam reflected or transmitted by the tunable mirror (paragraph 61, lines 1-6) in order to actively control the resonance wavelength of the laser system. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a method for selecting the emission wavelength of a tunable laser having an external-cavity defining a plurality of cavity modes with a light beam being emitted by a gain medium and the alignment of the resonance wavelength is accomplished by analyzing the modulated component of the light beam reflected or transmitted by the tunable mirror in order to actively control the resonance wavelength of the laser system.

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Claims 15 and 25: '928 and '526 teach the method as in claim 14. '928 teaches the step of aligning the resonance wavelength is carried out by changing the amplitude of the voltage applied to the tunable mirror so as to minimize the amplitude of the modulated component of the light beam either reflected by the tunable mirror or transmitted through the tunable mirror (col. 8, lines 59-61).

Claim 16: '928 and '526 teach the method as in claim 15. They do not explicitly teach the amplitude modulation of the light beam reflected by or transmitted through the tunable mirror is controlled to be not larger than +2%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the amplitude modulation of the light beam reflected by or transmitted through the tunable mirror be controlled to be not larger than +2%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 17: '928 and '526 teach the method as in claim 16. They do not explicitly teach the amplitude modulation of the light beam reflected by or transmitted through the tunable mirror is controlled to be not larger than +1%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the amplitude modulation of the light beam reflected by or transmitted through the tunable mirror be controlled to be not larger than +1%, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

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Claim 18: '928 and '526 teach the method as in claim 14. '526 teaches the analyzed modulated component is at frequency f_A (paragraph 48, lines 1-6).

Claim 19: '928 and '526 teach the method as in claim 14. '526 teaches the analyzed modulated component is at frequency $2f_A$ (paragraph 49, lines 13-16).

Claim 20: '928 and '526 teach the method as in claim 14. '526 teaches selecting by means of the tunable mirror comprises introducing a filtering element between the gain medium and the tunable mirror (paragraph 23, lines 6-13 and Fig. 1, part 34), a spectrally selective loss element defining at least a pass band comprising the at least one of the cavity modes (paragraph 23, lines 19-22).

Claim 21: '928 and '526 teach the method as in claim 20. '526 teaches the spectrally selective loss element is a grid element defining a plurality of pass bands substantially aligned with corresponding channels of a wavelength grid (paragraph 23, lines 14-19).

Claim 22: '928 and '526 teach the method as in claim 20. '526 teaches the step of aligning a pass band of the spectrally selective loss element to the at least one of the cavity modes by adjusting the injection current of the gain medium so as to maximize the laser output power (paragraph 44, lines 7-14).

Claim 23: '928 and '526 teach the method as in claim 22. '526 teaches the step of aligning a pass band of the spectrally selective loss element to the at least one of the cavity modes and the step of aligning the resonance wavelength of the tunable mirror to the at least one of the cavity modes are carried out sequentially (paragraph 44, lines 14-19 and paragraph 45, lines 1-7 and Fig.4).

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Claim 26: '928 and '526 teach the tunable laser module according to claim 24. '526 teaches the controlling device is included in an electronic circuit card (Fig. 4).

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK STAFFORD whose telephone number is (571)270-1275. The examiner can normally be reached on M-Th 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. S./

Examiner, Art Unit 2828

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828